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SCIENCE

NEW YORK, AUGUST 12, 1892.

THE CHIEF MOUNTAIN LAKES.

BY GEORGE BIRD GRINNELL.

IN Volume I., Pacific Railroad Reports, pp. 548-549, Mr. James Doty speaks of visiting the Chief Mountain Lake, and describes it and its companion sheet of water. The maps of that survey and other more recent ones show lakes to which this name is given, and references in some recent literature apply to the lakes shown on those maps.

The lakes so named are, however, not the ones mentioned by Mr. Doty, but lie about 25 or 30 miles to the north and west of those which he visited, and it would appear that since Mr. Doty's time no geographer has recognized the lakes which he saw and which he speaks of as "the well-known Chief Mountain Lake." Those called by this name on government maps and referred to in reports of the international boundary survey, published in 1876, are locally known as Kutenai Lakes, but, of course, are not to be confounded with the true Kutenai lakes lying on the Pacific slope and in the bend of the Columbia River. The so-called Kutenai, or Little Kutenai, lakes are crossed by the international boundary line and form the sources of the Little Kutenai or Waterton River, and it is probable should be known as the Waterton Lakes. Chief Mountain is a well-known landmark of north-western Montana, but the Chief Mountain Lakes are unknown in that country, and the lakes mentioned by Mr. Doty are locally known as the St. Mary's Lakes, while the large river flowing from them is called St. Mary's River. It is the most important stream meeting Belly River from the south. The town of Lethbridge, in Alberta, N. W. T., stands at the junction of these two rivers.

Mr. Doty's description of his route, of the country, and of Chief Mountain Lake is very clear, and anyone who is familiar with the region traversed will at once recognize that the lakes on St. Mary's River are Chief Mountain Lakes.

For a number of years I have been in the habit of visiting the region in question, which has been practically unknown even to hunters and trappers, and have explored a section embracing perhaps 900 square miles.

I quote from Mr. Doty's narrative of his journey from Two Medicine Lodge Creek to the Chief Mountain Lakes. Under date of May 27 he says: "The country is considerably broken by high hills and narrow valleys of spring brooks, filled with thickets of poplar and willow and flooded by beaver dams. In twelve miles came to a fine stream [now known as Willow Creek] which is a branch of Cut Bank River; and in sixteen miles reached the Cut Bank itself, the most northerly fork of Marias River. It is a rapid stream, fifty feet wide, and flows through a rich valley. . . . A broad lodge-trail leads up the valley indicating that the pass is considerably used — probably by the Pend d' Oreilles and Kootenais who come through to hunt buffalo. Crossed at a good ford; pushed on over a range of high hills and encamped on a small stream eight miles from Cut Bank River, which is no doubt one of the sources of Milk River. . . .

" May 28. Morning cold, and the hills are white with snow. The country is quite flat and full of springs and spring brooks, which are the sources of Milk River. On our left is a heavy forest of pine timber fifteen miles in length and extending into the plain eight miles from the base of the mountains. Immediately after passing the point we obtained a view of the chief (*sic*) of King Mountain, which is a bare rocky peak of a square form, standing at a distance of five or six miles from the main chain, and connected with it by a high ridge wooded with pine. In seventeen miles came to a broad valley, the sides of which are wooded with pine and poplar; and in the bottom, five hundred feet below us, we saw the blue water of a mountain lake. This is the well-known Chief Mountain Lake. It takes its name from Chief Mountain. . . . Descending into the valley, in four miles, we reached the lake and encamped in a beautiful prairie bordering it.

" May 29. Moved up the lake three miles to its inlet and encamped. In this camp we remained until June 5th. . . .

" Chief Mountain Lake is seven miles long by one broad. Its banks are low and shore gravelly; the water clear and very deep. The valley of the lake is six miles in breadth, and is rolling prairie interspersed with groves of cottonwood and poplar, and in the low places the birch and willow. The soil is a reddish loam and is fertile, as is indicated by the luxurious vegetation. Pine of a fair size and thrifty growth is abundant and can easily be obtained, and there are inexhaustible quarries of good limestone.

" Connected with Chief Mountain Lake is another three-fourths of a mile wide and extending some nine miles into the mountains in the form of a bow, and I therefore called it 'Bow Lake.' It is shut in by mountains coming close down to the water, and has no valley susceptible of cultivation.

" The mean of observations for latitude gives as the latitude of this, the south end, of Chief Mountain Lake $48^{\circ} 43' 09''$, or 17 miles south of the boundary line. . . .

Numerous little streams emptying into these lakes are filled with beaver dams and beaver, this industrious animal having been left in quiet possession of this country since the low price of its fur has rendered it unprofitable to trap them. Elk, moose, and deer are abundant, and salmon trout of large size are taken in the lakes.

" June 5. Started due north along the lake-shore, and in seven miles came to the outlet at the extreme northern end. The outlet is called in the Blackfoot language *Mo-ko un* or Belly River. It is a swift, deep stream where it comes from the lake and about 80 feet wide, and its course for some miles is due north. This is the most southerly of the head-waters of the Saskatchewan River."

This excellent description of the country makes it clear to my mind that the name Chief Mountain Lakes belongs to those lakes, in north-western Montana, which are locally known as the St. Mary's Lakes. This name was given them nearly fifty years ago by Hugh Munroe, an old Hudson's Bay man, and Mr. Doty's companion on the occasion of his visit to the lakes.

It would seem from Mr. Doty's description that the stream

which we know as St. Mary's River is the true Belly River. This seems natural and proper, for at the point where they meet, the St. Mary's is a larger stream than Belly River.

As stated by Mr. Doty these lakes are two in number, the lower about seven miles long by a mile wide, the upper perhaps eleven miles long and nowhere more than a mile in width. The lower lake lies north and south, and the upper, Mr. Doty's Bow Lake, is bent about half-way up its length, its upper or south-western half lying nearly east and west, and its lower or northern half nearly north and south. Beyond the head of this upper lake is the narrow river-valley running back in two principal branches for a dozen miles and heading on the Continental Divide. The southernmost of the two branches is much the larger of the two, and is fed by extensive glaciers, which I have visited.

The lower end of the lower lake is not more than seven or eight miles from the Chief Mountain, the most striking landmark in this region. The waters flowing into the St. Mary's River are divided from those which flow into Cut Bank and Milk Rivers, tributaries of the Missouri, by a high ridge running out from the Rocky Mountains, and known as Milk River Ridge.

BIRDS BREEDING AT HANOVER, NEW HAMPSHIRE.

BY CLARENCE M. WEED.

THE village of Hanover, N.H., is in the region dividing the Canadian and Alleghanian faunas, and possesses many animal forms from both. To assist in determining more definitely the precise limits of these faunas, the Ornithological Club of the New Hampshire College undertook last spring to record the birds breeding within five miles of Hanover. The following list includes the species observed this season by the members of the club. Especial mention should be made of the assistance rendered by Messrs. P. L. Barker, R. A. Campbell, and C. E. Hewitt.

Green Heron, *Ardea virescens*. One nest observed.

American Woodcock, *Philohela minor*. Three nests observed.

Ruffed Grouse, *Bonasa umbellus*. Three nests observed.

Cooper's Hawk, *Accipiter cooperi*. One nest observed.

Acadian Owl, *Nyctala acadica*. One nest observed.

Black-billed Cuckoo, *Coccyzus erythrophthalmus*. One nest observed.

Belted Kingfisher, *Ceryle alcyon*. Two nests observed.

Downy Woodpecker, *Picus pubescens*. One nest observed.

Golden-winged Woodpecker, *Colaptes auratus*. Two nests observed.

Night Hawk, *Chordeiles virginianus*. One nest found fifteen miles south-east of Hanover; and others reported by outsiders within three miles of the village.

Chimney Swallow, *Chaetura pelagica*. Many nests.

Ruby-throated Humming-Bird, *Trochilus columbris*. One nest.

Kingbird, *Tyrannus tyrannus*. One nest.

Pewee, *Sayornis phoebe*. Many nests.

Trails' Flycatcher, *Empidonax pusillus*, var. *trailli*. One nest.

Least Flycatcher, *Empidonax minimus*. One nest seen at Grafton Centre, N.H., fifteen miles south-east.

Blue Jay, *Cyanocitta cristata*. One nest at Fairlee, Vt., eighteen miles north.

Crow, *Corvus americanus*. Two nests.

Bobolink, *Dolichonyx oryzivorus*. One nest.

Cowbird, *Molothrus ater*. Three eggs found in a bobolink's nest.

Red-winged Blackbird, *Agelaius phoeniceus*. Two nests.

Baltimore Oriole, *Icterus galbula*. Several nests.

Red Crossbill, *Loxia curvirostra*. In 1891 a very young specimen was brought me that apparently must have been raised in this vicinity.

Yellowbird, *Spinus tristis*. Two nests.

Purple Finch, *Carpodacus purpureus*. One nest.

Bay-winged Bunting, *Poocetes gramineus*. Several nests.

English Sparrow, *Passer domesticus*. Several nests.

Savanna Sparrow, *Ammodramus sandwichensis*, var. *savanna*. One nest.

Chipping Sparrow, *Spizella socialis*. Several nests.

Song Sparrow, *Melospiza fasciata*. Several nests.

Swamp Sparrow, *M. georgiana*. One nest.

Snow Bird, *Junco hyemalis*. One nest observed at Grafton Centre, N.H., fifteen miles south-east.

Indigo Bird, *Passerina cyanea*. Two nests seen in 1891.

Barn Swallow, *Chelidon erythrozaster*. One nest observed.

Purple Martin, *Progne subis*. One nest.

Bank Swallow, *Clivicola riparia*. Two nests.

Cedar Bird, *Ampelis cedrorum*. Two nests.

Great Northern Shrike, *Lanius borealis*. Two nests.

Red-eyed Vireo, *Vireo olivaceus*. One nest.

Yellow Warbler, *Dendroica aestiva*. One nest.

Chestnut-sided Warbler, *Dendroica Pennsylvanica*. One nest.

American Redstart, *Setophaga ruticilla*. One nest.

Oven-bird, *Seiurus aurocapillus*. One nest.

Catbird, *Galeoscoptes carolinensis*. Two nests.

Brown Thrush, *Harpornynchus rufus*. One nest.

House Wren, *Troglodytes aedon*. One nest.

Short-billed Marsh Wren, *Cistothorus stellaris*. A nest supposed to be of this species is reported.

Chickadee, *Parus atricapillus*. Two nests.

Tawny Thrush, *Turdus fuscescens*. Three nests.

Hermit Thrush, *T. pallasi*. Two nests.

Robin, *Merula migratoria*. Several nests.

Blue Bird, *Sialia sialis*. Several nests.

Of course this list includes only a portion of the birds breeding here, but it may serve as a basis for future observations.

New Hampshire College.

HOT WEATHER IN MARS.

BY PROFESSOR EDWIN J. HOUSTON.

THE recent severe, protracted, hot weather, that existed in the central and eastern portions of the United States during the latter part of July, formed, in all probability, but part of various general phenomena produced by profound solar disturbances.

So many of the earth's natural phenomena find their origin in the solar radiation, that it is impossible to vary either the amount or the distribution of the solar energy without markedly modifying terrestrial phenomena. Such influences, however, are not limited to terrestrial phenomena; they must extend beyond the earth and be shared by all the members of the solar system.